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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,038	08/02/2001	Patrick Klersy	2024.25	9321

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ENERGY CONVERSION DEVICES, INC.
2956 WATERVIEW DRIVE
ROCHESTER HILLS, MI 48309

EXAMINER

CAO, PHAT X

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,038

Applicant(s)

KLERSY ET AL.

Examiner

Phat X. Cao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 35-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species II (claims 9-34) in Paper No. 9 is acknowledged.

Claim Objections

2. Claims 9 and 15 are objected to because of the following informalities:
 - in claim 9, line 7, "less that" should be changed to "less than";
 - in claim 15, line 7, "smaller that" should be changed to "smaller than".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, " a third conductive layer ... **through an edge portion of said second conductive layer**" is unclear.

For the examination purpose, the Examiner assumes that the electrical communication between the second and first conductive layers is through an edge portion of the third conductive layer, but not an edge portion of the second conductive layer.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 9-11 and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Wolstenholme et al (US. 5,998,244).

Regarding claims 9 and 13-14, Wolstenholme (Fig. 6) discloses an electrically programmable memory element, comprising: a first dielectric layer 15; a first conductive layer 22 formed over the first dielectric layer 15; a second dielectric layer 45 formed over the first conductive layer 22, the second dielectric layer 45 having a pore 50 therein, the pore having a minimum lateral dimension of about 1000 angstroms (column 4, lines 17-18); a programmable resistance material 55 comprising a phase change material of chalcogen element disposed within the opening; and a second conductive layer (60,65) formed over the programmable resistance material.

Regarding claims 10-11, Wolstenholme's Fig. 6 further discloses a third conductive layer 20 (or a sidewall layer) electrically coupled between the first conductive layer 22 and a substrate 5, wherein substantially all electrical communication between the second conductive layer (60,65) and the first conductive layer 22 is through an top edge portion of the third conductive layer 20.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 15-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolstenholme et al (US. 5,998,244).

As discussed in details above, Wolstenholme's Fig. 6 substantially reads on the above claims, except that it does not disclose a pore sized 50 being smaller than a photolithographic limit.

However, Wolstenholme's Fig. 13 does teach the forming of a pore sized 150 smaller than a photolithographic limit. Accordingly, it would have been obvious to modify Wolstenholme's Fig. 6 by forming a pore sized 50 being smaller than a photolithographic limit because as taught by Wolstenholme, such modification would provide an ultra-small pore having a minimum lateral dimension (column 7, lines 36-42).

8. Claims 21-24, 26-31, and 33-34 rejected under 35 U.S.C. 103(a) as being unpatentable over Wolstenholme et al in view of Batra et al (US. 6,242,781).

As discussed above, Wolstenholme's Fig. 6 substantially reads on the above claims, except that it does not disclose a spacer disposed at a peripheral portion of the pore.

However, Batra's Fig. 7 teaches a contact opening having a spacer 68 formed at a peripheral portion of the pore. Accordingly, it would have been obvious to modify Wolstenholme's Fig. 6 by forming the spacer with the structure as set forth above in order to provide an ultra-small pore having a width which is less than the minimum available photolithographic feature size, as taught by Batra (column 6, lines 27-31).

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9. Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolstenholme et al in view of Tanahashi (US. 6,064,084).

Wolstenholme does not disclose the third conductive layer 20 being a conductive sidewall liner.

However, Tanahashi (Fig. 3C) teaches the forming of a contact structure having a conductive sidewall liner 53 formed in a contact opening. Accordingly, it would have been obvious to form the third conductive layer of Wolstenholme as a conductive sidewall liner because as taught by Tanahashi, such conductive sidewall liner would reduce the contact resistance (column 10, lines 5-9).

10. Claims 25 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolstenholme et al and Batra et al as applied to claim (23,30) and further in view of Tanahashi (US. 6,064,084).

Wolstenholme does not disclose the third conductive layer 20 being a conductive sidewall liner.

However, Tanahashi (Fig. 3C) teaches the forming of a contact structure having a conductive sidewall liner 53 formed in a contact opening. Accordingly, it would have been obvious to form the third conductive layer of Wolstenholme as a conductive sidewall liner because as taught by Tanahashi, such conductive sidewall liner would reduce the contact resistance (column 10, lines 5-9).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is (703) 308-4917. The examiner can normally be reached on Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

PC
July 25, 2003


PHAT X. CAO
PRIMARY EXAMINER